

Newsletter

Newsletter 20

Telesensory Systems, Inc., Palo Alto, California U.S.A.

Spring 1979

Development Milestone Highlighted at Technical Briefing



Dr. Gabriel Groner, team leader for TSI's Voice Communication Project, outlines the component parts of the TSI spoken word output reading system to attendees at the first of two technical briefings held in February and March. (See Progress Report insert.) □

On February 22 and March 1, TSI held two technical briefings to familiarize members of the research and blindness communities in the U.S. and Canada with the current state of development of a talking attachment for the Optacon.

The briefings outlined the overall reading needs of blind individuals addressed by various configurations of reading systems, the philosophy and objectives of the development project and an explanation and demonstration of the component parts of the talking Optacon attachment.

A demonstration of the TSI synthetic speech in "real time" highlighted the presentation. This breakthrough achieved early this year means that the system which converts text to speech is now working at rates up to 200 words per minute. Previously, one second of synthetic speech took six minutes to generate, much too slow to be used in a reading machine. Now, one second of speech can be produced in one second. Dr. Gabriel Groner, team leader for the TSI Spoken Word Output Project comments, "This real-time breakthrough is a major milestone in the research effort. We have demonstrated that we can produce speech in real time, using a sophisticated approach that will result in high-quality

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5,000th Optacon Presented

Dr. Edwin Martin, director of the Bureau of Education for the Handicapped (BEH), United States Office of Education, presented the 5,000th Optacon on December 19, 1978, to Sara Atatur, a high school junior participating in the BEH Optacon Dissemination Project. The presentation, held at the National Press Club in Washington, D.C., highlighted over a decade of BEH involvement in the development, evaluation and dissemination of the Optacon. Dr. James C. Bliss, president of TSI, read a statement to the assembled members of the press, representatives of governmental and congressional offices and national organizations, commending the continued involvement of BEH, which has enabled over 1,100 blind students to gain the opportunity to learn to read print using the Optacon. Dr. Bliss hailed Dr. Martin as a champion of expanded educational opportunity for children with disabilities and noted his leadership in establishing the Optacon Dissemination Project, now in its third year.

Dr. Martin stated that the government's involvement with the overall Optacon program marked several firsts for the federal government. He noted

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Dr. Edwin Martin, director of the Bureau of Education for the Handicapped, United States Office of Education, looks on as Sara Atatur, recipient of the 5,000th Optacon, reads a prepared statement to members of the press and Washington-based organizations at the National Press Club. □

Technical Briefing continued . . .

speech once we have done the fine tuning. That tuning is far easier than achieving this real-time milestone."

On the second day of the two-day meetings, other TSI product developments were discussed. The VersaBraille™ system, the Crib-O-Gram™ neonatal screening audiometer, the F5A movable ball typewriter attachment for the Optacon, non-vocal communication devices and other research and development efforts were outlined.

The February 22 briefing was attended by the project's advisory committee and representatives from the project's funding sources. The advisory committee includes: Mr. Loyal E. Apple, executive director, American Foundation for the Blind, New York; Mr. T.V. Cranmer, director, Division of Technical Services, Bureau for the Blind, Frankfort, Kentucky; Dr. Richard G. Umsted, superintendent, Illinois Braille and Sight Saving School and president of the Association of Educators of the Visually Handicapped; Mr. David M. Dorward, director, The A.V. Weir National Training and Vocational Guidance Center, Canadian National Institute for the Blind; and Mr. Claude Maurice, director general, Centre Louis Hebert, Ste-Foy, Quebec, Canada. The project has been supported in part by grants from the National Science Foundation, The Seeing Eye, Inc. and an interagency grant from the Veterans Administration, Bureau of Education for the Handicapped and the Rehabilitation Services Administration.

Among those in attendance at the March 1 briefing were representatives of blind consumer organizations, professors from the university training sites which prepare Optacon instructors, and several rehabilitation, education and service organizations.

An outline of key points discussed during the technical briefings is provided in a special Progress Report inserted in this newsletter. □

During TSI's January marketing meeting, field representatives were instructed in the use of the VersaBraille™ system. At that time, four engineering prototypes were released to field staff for circulation. From left to right: Tom Church, Germany and Austria Regional Manager, Jim Rodgers, Director of Federal Liaison, and John Beard, National Field Manager, review the VersaBraille system prior to receiving prototype units.

The units now in circulation have been demonstrated to several groups of blind consumers, educators and rehabilitation counselors. Audiences around the world have responded with universal enthusiasm and excitement about the VersaBraille unit, a truly revolutionary step forward in braille communication. □

5,000th Optacon continued . . .

that it represents an educational research project that has been sustained across several administrations and an effort to take research beyond the laboratory. The dissemination of these results has been achieved by establishing a delivery system including 29 universities which prepare teachers of the visually handicapped to teach Optacon and then by providing the Optacons to the universities, teachers and students.

Sara Atatimur used her new Optacon to read a prepared statement, which discussed her expanded independence since using the Optacon. She noted that the Optacon has been a factor in her finishing high school in three years, instead of the usual four.

A lively question and answer period followed the presentation, during which members of the press corps sought additional information. News stories appeared in over 130 newspapers in the United States and were reported by radio stations nationwide. □

Paperless Braille System Named

Following months of careful consideration, the TSI paperless braille system has been named. The name chosen, the VersaBraille™ system, represents versatile braille, a name for which the device is well suited. The VersaBraille system greatly increases the versatility, power, flexibility and utility of the braille medium, and brings it to an exciting new state of development. "Cassette braille," or "paperless braille," will come to be synonymous with the VersaBraille system, the most versatile braille device ever developed. □

Inventor of the Autocom Awarded United Cerebral Palsy's Outstanding Technology Award

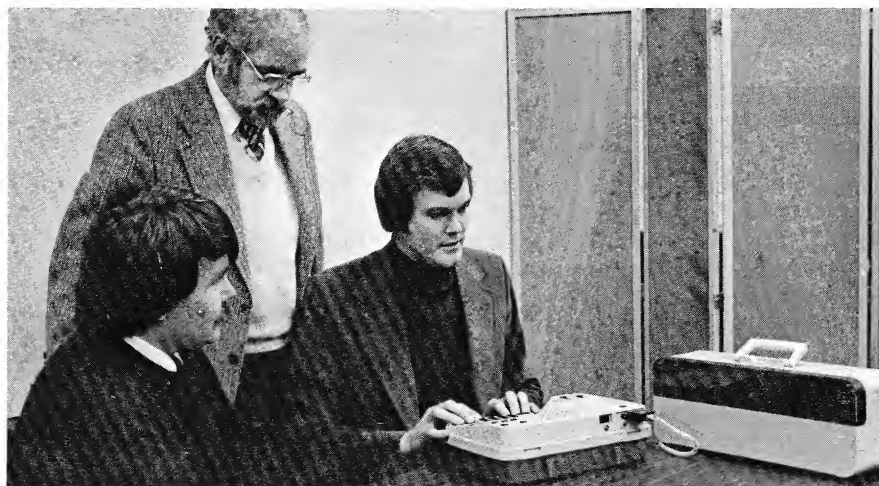
On April 6, Gregg Vanderheiden, director of the Trace Research and Development Center for the Severely Communicatively Handicapped, University of Wisconsin, received the Isabelle and Leonard H. Goldenson Award for Outstanding Scientific Research in Technology Relating to Cerebral Palsy and the Physically Handicapped. (Dr. James C. Bliss, president of TSI, was last year's recipient of the award.)

The award, presented at the Atlanta Hilton Hotel by the United Cerebral Palsy Research and Education Foundation, Inc. in a ceremonial dinner in Mr. Vanderheiden's honor, acknowledges his leadership in the development of the Autocom (AUTOMonitoring COMMunication board).

The Autocom, developed at the Trace Center, is a microprocessor-controlled communication system for non-vocal individuals. It is configured in a wheelchair lap tray format and enables the user to construct messages by moving a pointer magnet across the smooth surface of the message board. Magnetic reed switches beneath the surface of the aid trigger individual letters, words, or entire phrases stored in the device's seven level electronic memory system.

Messages are displayed on a calculator-type L.E.D. display, printed on paper or displayed on a television monitor.

Rights to manufacture and market the Autocom were awarded last year to TSI, which will be producing preproduction prototypes of the device beginning in 1979. □



TSI to Collaborate on Spoken Word Output System in Italian

A major Italian university has been awarded a NATO grant to collaborate with TSI on a research project entitled, "Evaluation of Electronic Aids for the Blind Based on Automatic Voice Reading Devices and Study of a System for the Italian Language."

The grant, funded through the NATO

Research Grant Program, will begin with the visit to TSI of two Italian scientists to study TSI's current work in the Voice Communication Project. This new project will be the first effort to expand the spoken word output system to include reading in languages other than English. □

President Signs Landmark Disability Legislation

In early November, following a strong showing of public support, President Carter signed Public Law 95-602, the Rehabilitation Comprehensive Services and Developmental Disabilities Amendments of 1978. Newsletter readers who responded to our earlier calls for support of this important legislation should be congratulated for their part in the enactment of this historic legislation.

This is regarded by many as the most progressive and potentially most effective measure ever adopted by the Congress on behalf of handicapped children and adults.

Among the act's sweeping provisions are the establishment of a National Institute on Handicapped Research (NIHR), a National Council on the Handicapped, and an interagency committee on handicapped research. The NIHR is intended to be a coordinating and overseeing body for all research regarding handicapping conditions. It shall coordinate all such research nationally and report to the Congress.

Regarding the creation of the NIHR, Olin Teague, then chairman of the House Committee on Science and Technology, stated, "This legislative authority, which I expect President Carter will rapidly implement, expresses congressional commitment and gives the administration authority and responsibility to apply this nation's vast scientific and technological resources for the benefit of handicapped individuals."

Among the legislation's other provisions are greatly expanded rehabilitation services to handicapped individuals, including services related to independent living, provision of reader and interpreter services and expanded provision for civil rights protection for disabled individuals.

In addition, the legislation enables research and development monies to flow to organizations in the private sector which may be involved in the development of technological aids for persons with disabilities. □

Crib-O-Gram™ Neonatal Screening Audiometer Introduced

The Crib-O-Gram infant screening audiometer was commercially introduced in North America in March of this year. The Crib-O-Gram unit is a microprocessor-based device used to identify infants in intensive care nurseries who have moderately severe to profound hearing loss. These infants would fail to develop language normally without hearing aids or special education.

Currently, the average age of accurate diagnosis of such infants is 2.5 years. By the time a child reaches that age, the critical period for speech and language development has passed.

A narrowband noise stimulus, a highly sensitive motion detector, and a microprocessor-based decision model for evaluation of the infant's response to the noise stimulus are incorporated within the Crib-O-Gram system. Infant activity prior to and following the signal is monitored. A series of 30 trials is administered to each newborn.

On the basis of these tests, the system makes a decision regarding the status of the baby's hearing. If it is concluded that the child has a hearing loss at the levels mentioned above, the Crib-O-Gram system illuminates a "refer" light and the child is referred for additional testing.

The fully automated Crib-O-Gram was developed following a seven year longitudinal study funded at Stanford University by the National Institutes of Health. This research study placed Crib-O-Gram units (using strip chart printers) in field sites around North America. On the basis of results from Stanford University School of Medicine, an estimated 2% of all infants seen in their intensive care nursery were hearing impaired at levels which would interfere with normal speech and language development. Through use of the Crib-O-Gram system, these infants will be identified and the probability of their development of language and speech is substantially improved.

For additional information regarding the Crib-O-Gram system, contact your local field representative or Dr. George Marcellino, TSI Auditory Products Manager. □

Interagency Grant Awarded for Spoken Word Output Research

As reported in Newsletter 19, TSI has received an interagency grant from the Veterans Administration, the Bureau of Education for the Handicapped, and the Rehabilitation Services Administration for completion of the research on the Spoken Word Output Project, which will include development of the talking attachment for the Optacon. The 30-month grant which totals over \$700,000 has three major objectives.

First, the grant will fund the final research effort towards the development of a hand-scan voice output reading system (the talking attachment for the Optacon).

Second, the grant assists in the development of at least five production prototypes of that unit.

Finally, the grant partially funds research cost for development of the automatic scanning version of the voice output reading system.

The grant, which is considered an excellent example of various governmental agencies working in concert towards a common purpose, funds approximately 25% of the total costs involved in the project. The remaining 75% of the funds needed will come from foundations and TSI.

The first production models of the hand-scan system are expected in mid-1980. The automatic scanning system will follow in mid-1981. □

WCWB 5th Asian Conference in Hong Kong

TSI exhibited the Optacon and SPEECH+ calculator December 3-9, 1978, at the World Council for the Welfare of the Blind (WCWB) 5th Asian Conference on Work for the Blind in Hong Kong. The conference was organized by The Hong Kong Society for the Blind and sponsored by the Committee on Asian Affairs of the WCWB. Delegates from over 20 Asian countries attended.

During the week-long conference, papers were presented on the theme, "Towards Total Integration—A Practical Approach." Mrs. Anne Leahy, TSI International Specialist, demonstrated TSI's products which attracted much interest as devices to aid in "Total Integration." □

From the field — Thoughts on The Game Center in Use

Electronic games are a recreational activity being enjoyed by an ever increasing number of people. Matching wits with microcomputers, stretching one's memory, testing one's reaction time, competing against previous performance, or in friendly competition, these activities are being enjoyed by more and more people, sighted and blind, through use of The Game Center from TSI.

The Game Center is back in production, following some chassis modifications. Since its initial introduction in late 1977, it has been placed in numerous settings. About one fifth of the units have been placed in schools, over one third in rehabilitation and service centers, and 15% purchased for individual use. The Blinded Veteran's Association has purchased one fourth of the units and placed them in the Veteran's Administration Blind Rehabilitation Centers across the United States, where they are enjoying popular use by the individual veterans in residence at the centers.

The Game Center at the South Dakota School for the Visually Handicapped

The South Dakota School for the Visually Handicapped received their unit in April of 1978. It was purchased through federal Title I funds, under the rationale that it was a useful tool for leisure time activity. Wayne Oster, business manager for the school, reported that initially a group of teachers learned to use The Game Center, and were then available to teach any student wanting to learn. To date, over 80% of the students have taken advantage of The Game Center, which is kept in the school library. It is available for library use or loan. Mr. Oster feels that play with The Game Center results in valuable educational benefits. "The biggest benefit is its capacity to train the students to respond quickly," he noted. "It's educational, yet it's fun. There's no need to force kids to use it; they really want to." Mr. Oster said that he felt The Game Center was a good investment, and that if he had it to do over again, he would even apply direct state funds to its purchase.

Eddie Timonus, a fifth grader, is the school's unofficial champ at play on The Game Center. "It's a good teaching unit," he said thoughtfully, "besides, it's lots of fun." Eddie, along with the other students at the South Dakota School use The Game Center in their free time and after school.

He has totalled a score of 38 remembered digits playing The Chain Game, a remarkable total. Eddie commented that his other favorite games were Number Run and Tug O'War. Eddie echoed Mr. Oster's sentiment about the value of The Game Center as a tool to help improve reaction time. He added that games like Tic-Tac-Toe help develop skills of strategy, and that games like his favorite, The Chain Game, improve memory skills.

Innovative User Adds New Twist to Paddleball Game

Tom Wehling, a resident of a suburb of Los Angeles, saw The Game Center at a state convention and immediately decided he wanted one for his own. It was the Paddleball game, he remembered, that really sold him. Tom reflected that the Paddleball game (at which he is very proficient) helps build endurance and that overall, The Game Center is educational and challenging. He also has become a pro at The Chain Game, and believes that it helps develop memory skills. Number Run and Blackjack are also among his favorites. His preference varies, depending on whether he is playing alone or involved in friendly competition.

Tom has developed some innovative twists to games, like patching the audio output of the Paddleball game through his electronic "reverb" unit before amplifying it through his stereo. Tom reports it

makes the game much more difficult. Tom works as an electrician's helper for the County of Los Angeles, and enjoys The Game Center during some of his leisure time away from the job.

All Age Groups Enjoy The Game Center in Montreal

The Montreal Association for the Blind is a broad spectrum service and education organization serving an active caseload of over 900 people. The Game Center they own has been tried in their elementary school, their residence for multiply handicapped blind young adults, and their senior residence. Dr. John Simms, director general of the Montreal Association reported that it had been very successful in all three settings, particularly in the school and the residence for young adults. The Game Center was so popular, in fact, that they will be ordering another unit. "When The Game Center was made available, it was given good use," Dr. Simms noted. "It is very stimulating for all age groups, but especially for children who are learning arithmetic. Children are so full of energy, something like this can enable them to be stimulated to learn while being entertained." The Game Center was supported by teachers and volunteers who were available to teach others to play.

For additional information regarding The Game Center, contact your local field representative or Gayle Brugler, Blindness Programs Manager at TSI. □

TSI Speech To Be Used in Electronic Chess

Fidelity Electronics, Ltd. of Chicago, Illinois, will soon introduce an electronic chess game known as the "Voice Chess Challenger" which will incorporate TSI synthetic speech and hence be usable by blind chess players. The microprocessor-based device will be the newest in Fidelity's series of electronic board games and will be available after July of this year.

The Voice Chess Challenger will announce the microprocessor's moves and captures as they occur. All board positions will automatically be repeated on command. Ten levels of difficulty of play are possible, allowing individual chess skill and experience to be matched with the Chal-

lenger. The chess pieces themselves are magnetic and will adhere to the board's surface while a blind player is tactually studying position of pieces. Rows and columns will be tactilely marked. Due to these features, the computerized game will be well suited for blind chess enthusiasts.

TSI will be marketing the Voice Chess Challenger to its customers. Both brailled and taped instructions will be provided.

Price of the Voice Chess Challenger is expected to be about \$325.00. For additional information, contact Barbara Glavish, Speech Components Coordinator, at TSI. □

TSI Plans Family of Flexible Reading Systems

Meeting the Print Reading Needs of Blind People

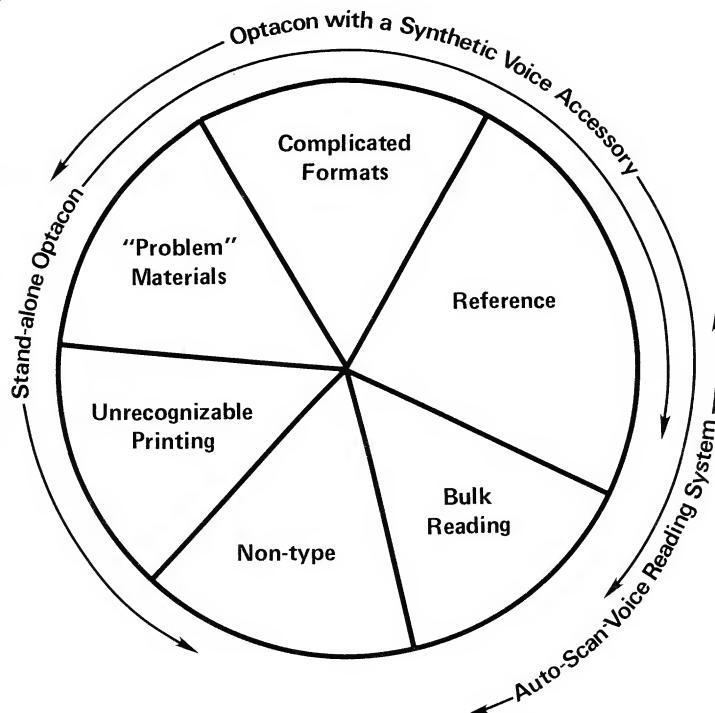
Because we believe that no single device can meet all types of print reading needs of blind people, TSI's Voice Communication Project is developing a family of devices which will each address a segment of these reading requirements. The three configurations are:

- The stand-alone Optacon
- The Optacon with a synthetic voice accessory that speaks when the reader scans print by hand
- An automated voice reading system that automatically scans print with synthetic voice output

Each of these reading configurations has advantages over the other two. The stand-alone Optacon is the least expensive, most portable, and most flexible. It is capable of enabling one to read almost anything, from math symbols and foreign words to reference materials and textbooks. However, it is slow and requires considerable skill and training.

The voice accessory, to be introduced in 1980, can be added to any one of the

Reading Needs of Blind People



5,500 Optacons in the field. It enables the user to increase reading speed up to 200 words per minute and reduces the required skill, training and effort needed with Optacon use. The voice accessory makes it easier to read longer texts, while the

attached Optacon is useful for scanning materials in order to locate desired text, and for interpreting graphs, symbols and foreign alphabets. Thus, the accessory augments, rather than substitutes for, the Optacon's capabilities.

The automated voice reading system, planned for introduction in 1981, adds an automatic tracking mechanism. TSI's automated system is being designed to make it convenient for blind people to read both simply formatted materials such as novels and materials that require skimming.

Objectives

Our analysis of reading needs aided by consumer input has led to several design objectives for the spoken word output reading machines. These objectives include:

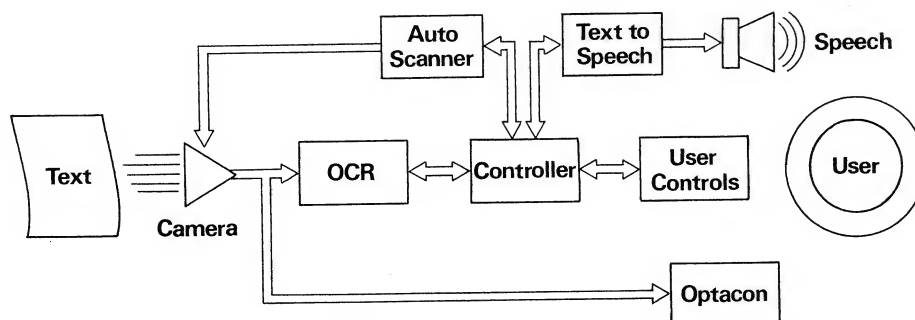
- Optical character recognition techniques compatible with Optacon use and the speed, accuracy, and versatility required for a voice output reading device

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Engineers Domenico Ponta and Sun-Ming Cheung develop optical character recognition microprocessor hardware in the TSI engineering Laboratory.

- Conversion of text to synthesized speech that is easily understood and that can be listened to for long periods without fatigue
- User controls that are easy to use, but powerful and flexible
- Relatively low cost
- Easily transportable
- Reliable and easily serviced
- Upgradable



Reading Machine Modules

To meet these objectives, and to take advantage of the power and low cost of present and future microcomputer technology, TSI has chosen a modular, microcomputer based approach. Separate modules perform the optical character recognition (OCR), text to speech (TTS) conversion, optional automatic scanning, and control functions.

Optical Character Recognition

The OCR module interprets camera images as characters. It is especially designed to correctly read many common print fonts at moderate speed, but need not have the high speed and accuracy (or high cost) of an OCR device designed for commercial data entry applications such as scanning manuscripts for typesetting or word processing.

Scanner

The scanner, to be used only in the automated system, will automatically locate and scan print.

Controller

All of these modules and the user controls attach to the controller which supervises all system functions. The controller also reformats text so that abbreviations, dates, times and dollar amounts are spoken intelligibly.

Modularity

Modularity makes it practical to upgrade the functional components as new techniques are developed and as improved or less expensive hardware becomes available. It also allows the system to be reconfigured to meet other needs, e.g., the controller and text to speech modules can be used together with a computer terminal to provide a talking terminal for blind programmers.

Status of the Voice Communication Project

TSI is making good technical progress and is also acquiring vital consumer feedback. Presently, a multi-computer demonstration unit using Optacon hand scanning recognizes print in several fonts, reformats text, and uses state-of-the-art techniques together with custom designed hardware, to synthesize speech at normal speaking rates. Engineers continue to improve the unit's functional behavior and to develop the reading machine hardware. Many of the improvements result from evaluations and suggestions made by blind consumers.

We plan to construct a fully microcomputer based demonstration unit in summer 1979 and to intensify consumer evaluations at that time. Prototypes of the voice-output accessory for the Optacon will be built for field evaluations by the end of 1979. Production will begin in 1980. The automated voice reading system will follow about one year later.

Funding for this project has been provided, in part, by grants from the National Science Foundation, the Seeing Eye, Inc., and an interagency grant from the Veterans Administration, the Bureau of Education for the Handicapped and the Rehabilitation Services Administration. TSI will provide the major support for the development costs.



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Who's New at TSI...

Field Representative—In November 1978, Jim Halliday joined the TSI field force as representative to the newly created Mid-Atlantic Region. This region encompasses the states of Virginia, West Virginia, Pennsylvania, and North Carolina, all previously part of several other eastern territories.

Jim holds a B.A. in Drama from San Jose State University. Prior to joining TSI's field force, Jim worked as a media designer for DeAnza College in Cupertino, California, and as a freelance media designer. His work included development of TSI's various slide/tape and audio cassette presentations, interview segments with disabled individuals which are now being used in various training programs, and commercials for the Human Rights Commission. His work has been both popular and effective in informing audiences on numerous issues and TSI has benefitted greatly from his work. Jim also enjoys writing and performing music, and is an accomplished and creative musician and actor.

He recently moved with his family to Vienna, Virginia. Residents of Jim's region may contact him at: 2112 Statute Lane, Vienna, VA 22180, (703) 281-0889.

Engineering—In late 1978, Noel Runyan joined TSI's engineering staff as a design engineer. Noel holds a B.S. in Electrical Engineering and Computer Science from the University of New Mexico.

Noel's engineering interests and expertise are wide-ranging. As a blind engineer, he has realized the need for specific tools and instruments, and has applied his talents in that direction as well as many other areas, developing numerous types of tools and equipment useful to blind people. Some of this work was performed during his five years at IBM, which preceded his employment at TSI.

While a student at the University of New Mexico, Noel designed a digital voltmeter with braille output, a braille display for an HP 35 calculator, a punch card reader for blind people, and a tactile output for a digital multimeter. Noel's work has been widely acclaimed, and he holds numerous honors, including the Eta Kappa Nu Most Outstanding Electrical Engineering Student in the U.S.A. in 1972, and the IBM Contribution Award in 1978.

Noel's efforts at TSI have been directed toward the SAGEM Braille Embossing Computer Terminal, the VersaBraille system, and in the near future on the Spoken Word Output Project. Noel enjoys beekeeping, hydroponics, and solar energy systems

design. He also enjoys another avocation—magic! Noel has developed non-visual magic for performance and appreciation by blind people. □

Florida State University Establishes Unique Optacon Program

There are 51 blind and partially sighted students enrolled at Florida State University in Tallahassee, Florida. This group of individuals is served by a unique resource program established through an Innovation and Expansion (I & E) grant from the State of Florida. The grant funded a Rehabilitation Training Aid Laboratory (RTAL) housed in the Student Assistance Center of the university. The RTAL is a resource center with a wide ranging store of reading and study aids ranging from tape recorders, (some with speech compression) and SPEECH+ calculators to closed circuit television reading systems, Optacons and braillewriters. The grant was awarded to the Florida Council of the Blind, which developed the grant in conjunction with the Division of Blind Services and Tallahassee Lions Clubs.

In addition to the use of the devices on long term loan while the students are enrolled at FSU, free Optacon training is available to any blind student who meets training requirements. Presently there are eleven students enrolled in the Optacon training course. Another ten students have graduated from the training. Those students who have need of Optacons in their employment after college are provided units by their counselor from the Division of Blind Services. This arrangement allows students to benefit from Optacon training and use during their college years and eventually own their own Optacons for use in vocational settings.

An additional aspect of the RTAL is the full-time rehabilitation counselor (John Douglas) employed under the I & E grant. Many students have their cases transferred to Mr. Douglas so that they can have immediate access to his services during their collegiate work. The program represents a creative use of the federal/state Innovation and Expansion grant monies and is worth considering at other university sites.

For additional information regarding the program or funding mechanism, contact Mr. Harry McGee, District Director, Division of Blind Services, 2571 Executive Circle East, Howard Building, Tallahassee, FL 32301. □

Educational Close-Up

By Shearer Collins, Duval County, Florida

"I doubt if this new machine will work, but at least I'll have another feather in my cap. I want to visit some friends in Tallahassee anyway..." That's how I felt when I left for the Optacon Teacher Training Course in the summer of '77. The course lasted two weeks. My feelings gradually began to change when I saw two Tallahassee students begin to read letters and then words. I then saw a law student read briefs using the Optacon instead of paying for a reader. A blind foreign exchange student expressed his opinion about how the Optacon would change his life and those of his future students in his developing country. I left Tallahassee with a different opinion, but still somewhat skeptical.

As the new school year approached, I told my teacher supervisor how I felt. She gave me nearly a free hand regarding the students I picked and the number of hours I scheduled to teach Optacon training. I decided on three students: an eleventh, a fourth, and a third grader.

The training began slowly. First the students had to learn the shapes of the letters. Then a setback—the Optacon didn't come until almost Christmas. I thought—half a school year lost—but they caught on fast and progressed well. They conquered upper case letters, numbers and lower case letters. I watched them progress through words and finally sentences.

I lost one of my first year students because he dropped out of school. The other two are reading about 25 words a minute with 90% to 100% comprehension. They will soon be reading out of their textbooks in the regular classroom.

My fourth student presented an unusual problem, she could read large print, but with difficulty, and she tended to reverse letters. It was slow at first, but she gradually picked up speed and accuracy, and the letter reversals stopped. She is progressing very well and will soon be reading as well as my other students. Another of my second year students is writing his name for the first time, since he learned the letter shapes by using the Optacon. This was very important to him, and he learned it soon after starting to read with the Optacon. Since I have introduced my students to several adults who use the Optacon at work, they now realize the Optacon not only gives more independence, but that it may open the door to the world of employment.

A miracle machine? No, but one that does give blind people more independence and additional opportunities in the job world. □

Movable Ball Typewriter Lens Introduced

Following 18 months of development effort, TSI recently introduced the F5A Optacon Accessory Lens designed for use with most movable ball IBM typewriters. These typewriters are widely used around the world. The availability of a lens attachment for these typewriters will mean a widening of vocational opportunities and advancement for blind persons in jobs requiring typing.

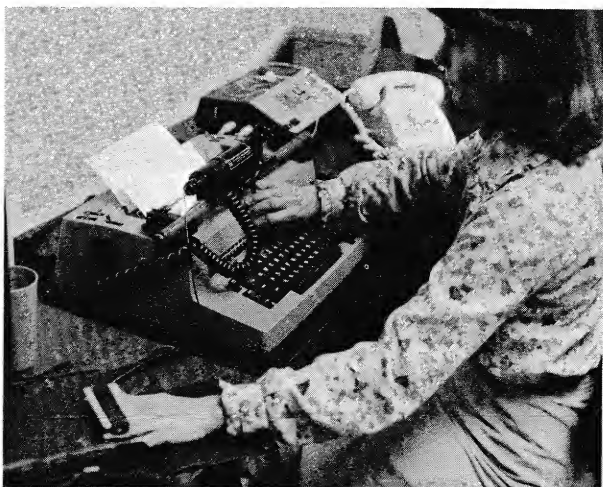
With the standard typewriter configuration, an Optacon lens module remains stationary while the carriage moves past a stationary typing element. Engineering the Optacon lens module for movable ball typewriters involved developing a system wherein the lens itself could move, allowing the typist to view any point across the page. Extensive consumer evaluation and design engineering were required to develop the final system.

The first two F5A units were delivered to two Atlanta, Georgia, secretaries, who are finding the lens attachments extremely useful. Ann Whitfield is a secretary for Atlanta Area Services for the Blind. "I

didn't get the F5A because I couldn't do my job without it," she reflected. "I got it because I thought it would give me more independence." Ann does find that many jobs which previously required sighted help (like locating her place in her typing following office interruptions, or making sure an error correction has been perfectly typed) are now achievable without the help of sighted co-workers.

Marion Blizzard is a full-time transcriptionist at Kemper Insurance. There she is able to use the standard Optacon typewriter attachment on her office typewriter. She uses her F5A attachment at home, where she is ambitiously pursuing a second job typing for an Atlanta clinical psychologist. "Dr. George requires letter perfect typing," Marion noted. "As I get more comfortable using the F5A, I will be sure I am typing correctly much more quickly and efficiently."

For additional information regarding the F5A typewriter lens module, contact your local field representative or Paul E. Liniak, Blindness Products Manager at TSI. □



Anne Whitfield, secretary at Atlanta Area Services for the Blind, uses her new movable ball typewriter attachment to the Optacon. □

TSI Marketing Moves to New Location

In early February the marketing department of TSI, Palo Alto, moved to a new location. Precipitated by increased company-wide space needs, the move enabled the engineering and manufacturing departments to expand into new space and prepare for new additions to the TSI family of products. The impact on most readers' contact with TSI will be unnoticeable. All mail should still be sent to 3408 Hillview, and all phone calls will continue to be handled by one main switchboard at (415) 493-2626. However, any old friends of TSI who might be making a surprise

visit to the marketing group should not drop in at the Hillview address. Marketing is now located at 2275 East Bayshore Rd., Suite 150, right off Highway 101 in Palo Alto.

We apologize to any of you who might have had trouble reaching us by phone during the week of the move. Phone service was temporarily disjointed.

If you would like to visit TSI for a tour or product demonstration, feel free to call for an appointment and directions. City bus service is available to our new location from downtown Palo Alto. □

Optacon Reading on the Rise

The Optacon has been manufactured, sold and used by blind people for over eight years now, and yet the demand and utility of the device is ever-increasing. In 1978 more Optacons were manufactured and shipped by TSI than in any previous year, and March of 1979, with production of 160 Optacons, marked the largest single month of Optacon manufacturing in TSI's history. 1979 promises to be another record breaking year for the Optacon.

"The Optacon has become a standard communication tool for blind people worldwide," said Dr. James Bliss, president of TSI. "Its acceptance in ever-increasing numbers in the field is a strong indication of its utility and effectiveness. We see a long life ahead for this method of reading by blind people." The Optacon is now used in 57 countries world wide. At the end of the first week of March, 5,561 Optacons had been manufactured and shipped by TSI. □

International Blindness Rehabilitation and Placement Information

The International Labour Office (ILO) of Geneva, Switzerland, collaborates with the World Council for the Welfare of the Blind to offer an "Information Service on the Rehabilitation and Employment of the Visually Handicapped" called **Blindoc**.

Blindoc is published every few months in English, French, and Spanish and lists information on newly developed aids, innovative vocational placements, vocational training programs, etc.

For further information contact: International Labour Office, Vocational Rehabilitation Section, CH-1211 Geneva 32, Switzerland. □

Optacon Travels to New Lands—Service and Training Teams Expand

Optacons are now in use in 57 countries. Two of the most recently trained Optacon users are in Haiti and Pakistan (thanks to the brilliant efforts of two teachers from the U.S.A., Mildred Reno and Carol Gillispie).

We continue to train teachers all over the world, most recently adding to the team new teachers in Austria, Bavaria, the United Kingdom, Iceland, The Netherlands, Spain, and Australia. A service facility is now in place in Pretoria, South Africa, run by Mr. Hannes Van Zyl. □

Vocational Close-up

The Metzses are a two Optacon family. Ken and Myra both received Optacons and training in 1974, both use their Optacons in their work, and both say they would feel lost without them. In fact, talking to the Metzses, one gets a glimpse of how important a part of a person's life the Optacon can become.

Myra is an avid reader. She has read over 15 complete novels using her Optacon and she prefers its use to either braille or talking books. As a medical transcriptionist, she gains increased independence with its use. She looks up information in the daily hospital log, checks spelling in her medical dictionary and proofreads her work. In all those small ways, she feels that it helps her perform her job more effectively and efficiently. But it is in her personal life that the Optacon means the most to her. "I spend at least one hour a day reading. I love to read, and the more I read the faster I get in using the Optacon. I love the independence of pulling my Optacon and book out of my purse and reading whenever I want to. Reading is a form of obtaining communication, one person to another. For me the Optacon is not just a vocational tool, it enables me to take advantage of that communication."

Ken matches Myra's enthusiasm. When he first began to use the Optacon following his training in 1974, he found his job suddenly expanded by about 20%. He was able to proofread letters, handle incoming mail, and deal with office memoranda. Ken

added a typewriter attachment to his Optacon, and then experienced the dramatic increase of an additional 80% in his work responsibilities and variety of tasks. Now he can fill out numerous printed forms and check his typing while it is still in his typewriter. Since he began using the typewriter attachment, Ken has even had his position at Pacific Telephone upgraded from a staff clerk to a division secretary. "I have become dependent on the fact that I can read print. It enables me to coordinate with my sighted peers. It's a good feeling to play an equal role in the work world."

Both Myra and Ken agree that their spelling has improved since they began using their Optacons. It has helped them on the job, and as parents too. Their daughter Merideth is six years old and learning to read and write. They help her with her spelling, printing, and reading, thanks to their Optacons and the knowledge about the print alphabet they have gained through its use. In addition, they use the Optacon for other parenting-related activities, like reading medicine bottles for Meredith and their son Jason, age three. Reading recipes and directions on food packages, reading their mail and paying their bills have also become regular Optacon tasks. Until they became Optacon users, the Metzses relied on sighted readers. Now they function entirely without such help. The Metzses are strong supporters of the Optacon and, considering the impact it has had on their lives, one can easily understand why. □

Tour of Scandinavia and Russia Being Formed

A group of blind and partially sighted individuals, and educators of the visually handicapped is now being formed to embark on a tour of Scandinavia and Russia. The tour will leave New York June 25 and return July 17. (A second tour is being planned for September.)

Scheduled stops include: Stockholm, Denmark, Leningrad, and Moscow. The emphasis of the tour will be reviewing services and facilities for the blind and other disabled populations in the countries visited.

Approximate cost of the trip is \$2,000. This includes air fare, hotels and meals. For additional information contact: Gayle Hodge, 1350 North McCadden Place, Los Angeles, California 90028, telephone (213) 463-8648. □

An Open Letter to Optacon Readers

I should like to notify interested Optacon readers that the quarterly letter formerly sent out under the title of "International Association of Optacon Users" will no longer be issued. Paul Filpus, Margaret Smith, Otis Stephens, and Harvey Lauer, who were members of an advisory board for the organization agree with me that the letter has served its purpose. We believe that so much has now been learned about the use of the Optacon that all needs can henceforth be met by the "Repeater Cable" and the "TSI Newsletter." I should like to extend public thanks to the West Virginia University Foundation for supporting the information letter and all cost connected with it.

I am willing to continue my efforts to find buyers for used Optacons. For this purpose please address me at 810 Stewart Street, Morgantown, West Virginia 26505, telephone (304) 296-3148.

Robert Stillwell □

Optacon Teacher Training Course In Tunisia

An Optacon teacher training course was held September 6-19 in Tunis, Tunisia. Three Optacon teachers and three blind students were trained in French by Mrs. Eva Ohman, a teacher trainer from Lund, Sweden. Mr. Mohamed Rajhi, Secretary General of the Union National des Aveugles de Tunisie, sponsor of the Optacon program, reports that the first three students trained, a legal advisor and two interpreters, have made good progress. Steps are now being taken by their respective employers to purchase Optacons for their use.

Since the original training program in September, three students have been trained every four weeks and such training will continue.

An additional course is currently being planned in Sousse, a city 140 kilometers south of Tunis, which will enable trainees from this outlying area to benefit from the Optacon. □

Self-scanning Retina Developed

TSI has achieved another breakthrough toward increasing the already high reliability of the Optacon. A new retina has been developed which contains a "self-scanning" microcircuit providing electronic functions previously performed by components within the Optacon chassis. Consolidation of the functions onto one microcircuit reduces the overall number of components needed and makes fewer wires necessary in the retina cable, thereby requiring less servicing by TSI. The new self-scanning retina has been phased into Optacon production beginning in March 1979. □

Optacon Battery Charger Recall Nears Completion

In June of 1978, TSI discovered a potential design weakness in the Optacon battery charger that led to an extensive recall and replacement program. Over 1,500 customer-owned battery chargers were recalled, although it was estimated that no more than 150 of the units contained problem-causing components. In actuality, we have discovered only 2 defective battery chargers during the recall. The recall effort is nearing completion, and we would like to express our thanks to all of you who participated in the exchange program. □

Western Canada Service Center

Residents of Western Canada (all provinces west of Ontario) are now being served by their own service center for Optacon and Speech Plus calculators. Jim and Carol Renshaw, of AIM Instrumentation, Ltd., are offering the same reliable maintenance and repair work that TSI customers have come to expect from all TSI authorized service centers. Residents of Western Canada can reach Jim and Carol at (604) 438-3033. A telephone call should be made (collect calls accepted) prior to shipping any equipment. Their mailing address is: AIM Instrumentation, Ltd., 7536 Royal Oak Avenue, Burnaby, British Columbia, V5J 4K1. □

Legal Resources in Braille and on Tape.

A new directory of legal resources available on tape or in braille has recently been published by the American Blind Lawyers Association. The index provides a very useful tool for any visually disabled person interested in law, whether at the paraprofessional or attorney level.

For additional information, contact the Tulsa County Bar Auxiliary, P.O. Box 35826, Tulsa, Oklahoma, telephone (918) 734-4094. The index is entitled, "The Gerritt Smith Van Valkenburgh Legal Index for the American Blind Lawyers Association." □

Service Agreement a Good Buy

Inflation has nibbled away at all of our finances, and TSI's service costs are not immune from these pressures. The price of retina or array repair has recently increased due to the inflationary spiral. One price hasn't gone up, however: our Service Agreement policy. Volume has helped keep this cost stable, and over the months it has become even more attractive. Under the provisions of the policy, we'll not only repair failures (including ones caused by accident), but we will provide annual cleaning and inspection. TSI will also cover the freight charges involved. Should you want additional information about Service Agreement coverage for your Optacon, contact the Service Department, TSI, Palo Alto.

A special note to all readers who now take advantage of this Service Agreement coverage: please notify us of all address changes. Note your renewal date on your calendar. We've had some problems in the past getting renewal notices to you. If you do not receive a notice from us, please contact the Service Department. Remember, it is your responsibility to make sure your policy does not lapse. □

TSI Engineers Present Papers at International Conferences

In December of 1978 TSI engineers presented papers at two international conferences focusing on the application of new technology. In both cases TSI was invited to submit papers reflecting current projects underway.

Jim Caldwell, project manager for the text to speech component of the Spoken Word Output Project, presented a paper on the work underway to create a large scale custom integrated circuit which electronically simulates the human vocal tract. The session at the joint meeting of the Acoustical Society of America and the Acoustical Society of Japan, in which the paper was presented, was focused on the applications of large scale integrated circuits for speech synthesis. Others in attendance expressed interest in utilizing these TSI integrated circuits in other devices for disabled people.

Rob Savoie, TSI research scientist, presented a paper at the Twelfth Hawaii International Conference on System Sciences. The paper discussed various applications of microprocessors in devices enhancing employment opportunities for blind people. (Such as the VersaBraille system and speech output recording systems.) Representatives of various government research laboratories, universities and industries gathered for the conference which dealt with the integrated activities and interaction of people with machinery and complex groupings of machinery. □



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